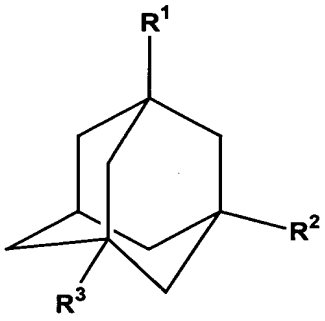
WHAT IS CLAIMED IS:

1. A compound comprising the structure of Formula IA:



IA

or a pharmaceutically acceptable salt thereof, wherein

R^1 is selected from the group consisting of H and OH;

R^2 is selected from the group consisting of $-C(=O)-COR^4$, $-C(=O)NR^5R6$, $-C(X)_n-COR^4$ and $-C-NR^7R^8COR^4$,

wherein

X is a halogen;

n is from 1-2

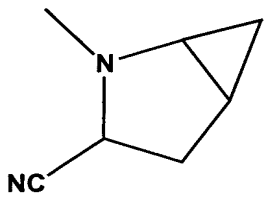
R^4 is selected from the group consisting of O-alkyl, NH_2 and OH; and

R^5, R^6, R^7 and R^8 are each selected from the group consisting of H and $COOR^9$, wherein R^9 is a substituted or unsubstituted alkyl; and

R^3 is selected from the group consisting of H, OH and R^{10}, wherein R^{10} is $NHR^{11}C(=O)R^{12}$,

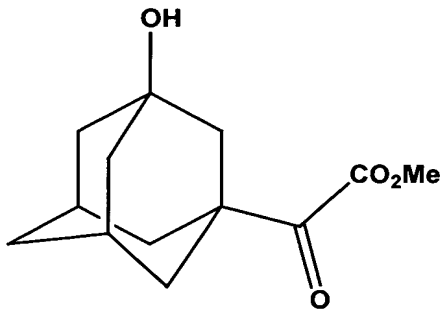
R^{11} is $R^{13}COOH$,

R^{12} is



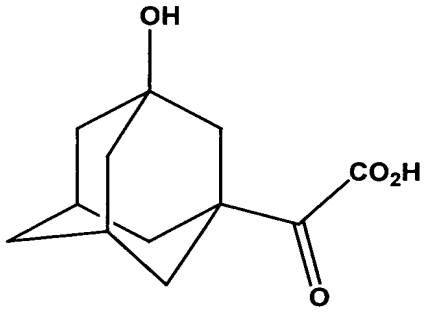
and R^{13} is an alkyl or aryl.

2. The compound of Claim 1 wherein the structure comprises Formula I,



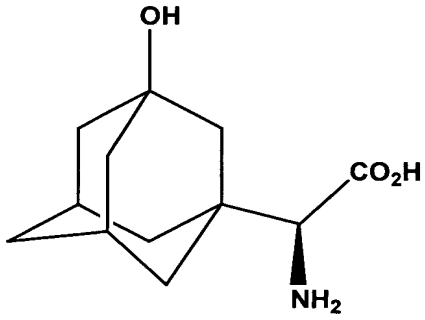
I

3. The compound of Claim 1 wherein the structure comprises Formula II,



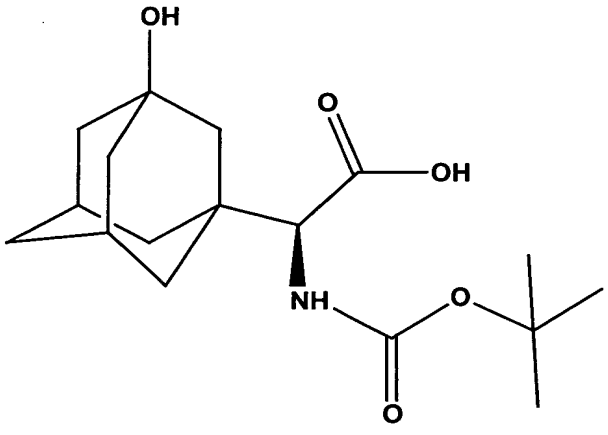
II

4. The compound of Claim 1 wherein the structure comprises Formula V,



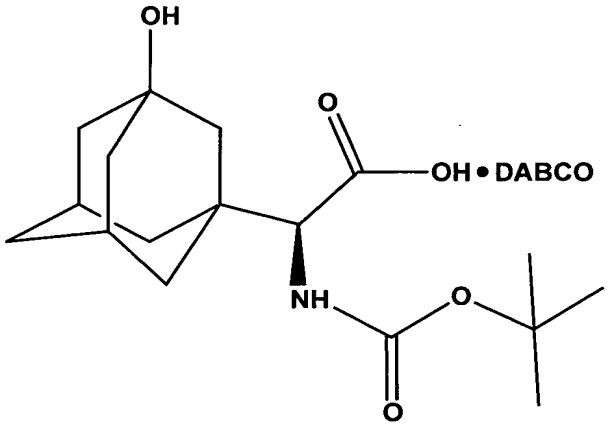
V

5. The compound of Claim 1 wherein the structure comprises Formula VI,



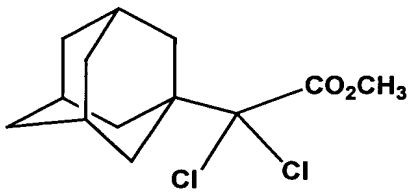
VI

or its DABCO salt VIA



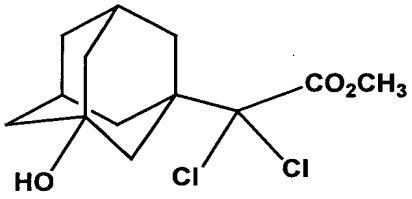
VIA

6. The compound of Claim 1 wherein the structure comprises Formula VII,



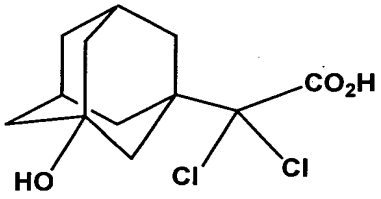
VII

7. The compound of Claim 1 wherein the structure comprises Formula VIII,



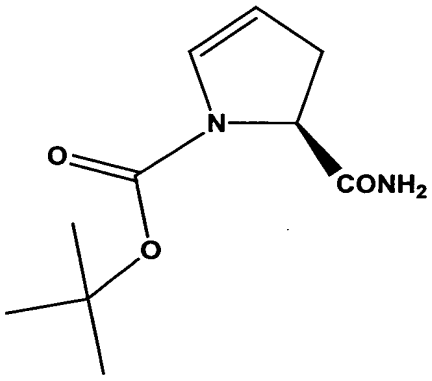
VIII

8. The compound of claim 1 wherein the structure comprises Formula IX



IX

9. A compound comprising a structure of Formula IV,



IV

10. A method for producing a cyclopropyl-fused pyrrolidine-based inhibitor of dipeptidyl peptidase IV comprising:

(a) coupling (<aS)-<a[[(1,1-dimethylethoxy)carbonyl]amino]-3-hydroxytricyclo[3.3.1.1^{3,7}]decane-1-acetic acid or its 1,4-diazabicyclo[2.2.2]octane salt to (1S,3S,5S)-2-azabicyclo[3.1.0]hexane-3-carboxamide to produce 3-(aminocarbonyl)-<aS)-<a-(3-hydroxytricyclo[3.3.1.1^{3,7}]dec-1-yl)-<b-oxo-(1S,3S,5S)-2-azabicyclo[3.1.0]hexane-2-ethanecarbamic acid, 1,1-dimethylethyl ester;

(b) dehydrating 3-(aminocarbonyl)-<aS)-<a-(3-hydroxytricyclo[3.3.1.1^{3,7}]dec-1-yl)-<b-oxo-(1S,3S,5S)-2-azabicyclo[3.1.0]hexane-2-ethanecarbamic acid, 1,1-dimethylethyl ester to produce 3-cyano-(<aS)-<a-(3-hydroxytricyclo[3.3.1.1^{3,7}]dec-1-yl)-<b-oxo-(1S,3S,5S)-2-azabicyclo[3.1.0]hexane-2-ethanecarbamic acid, 1,1-dimethylethyl ester; and

(c) hydrolyzing 3-cyano-(<aS)-<a-(3-hydroxytricyclo[3.3.1.1^{3,7}]dec-1-yl)-<b-oxo-(1S,3S,5S)-2-azabicyclo[3.1.0]hexane-2-ethanecarbamic acid, 1,1-dimethylethyl ester to form the dipeptidyl peptidase IV inhibitor.

11. The method of Claim 10 wherein (<aS)-<a[[(1,1-dimethylethoxy)carbonyl]amino]-3-hydroxytricyclo [3.3.1.1^{3,7}]decane-1-acetic acid, step (a) is produced by protecting (<aS)-<a-amino-3-hydroxytricyclo[3.3.1.1^{3,7}]decane-1-acetic acid with BOC.

12. The method of Claim 10 further comprising asymmetrically reducing 3-hydroxy-<a-oxotricyclo[3.3.1.1^{3,7}]decane-1-acetic acid to produce (<aS)-<a-amino-3-hydroxytricyclo[3.3.1.1^{3,7}]decane-1-acetic acid by amination or transamination.

13. The method of Claim 10 further comprising chemically synthesizing (<aS)-<a-amino-3-hydroxytricyclo[3.3.1.13,7]decane-1-acetic acid from tricyclo [3.3.1.13,7]decane-1-acetic acid.

14. The method of Claim 10 wherein (1S,3S,5S)-2-azabicyclo[3.1.0]hexane-3-carboxamide of step (a) is produced by removal of BOC from [1S-(1<a,3<b,5<a]-3-aminocarbonyl)-2-azabicyclo[3.1.0]hexane-2-carboxylic acid, 1,1-dimethylethyl ester.

15. The method of Claim 14 wherein [1S-(1<a,3<b,5<a]-3-aminocarbonyl)-2-azabicyclo[3.1.0]hexane-2-carboxylic acid, 1,1-dimethylethyl ester is produced by cyclopropanation of (5S)-5-aminocarbonyl-4,5-dihydro-1H-pyrrole-1-carboxylic acid, 1,1-dimethyl ester via a Simmons-Smith Reaction.

16. A method for producing (<aS)-<a-amino-3-hydroxytricyclo [3.3.1.1^{3,7}]decane-1-acetic acid as defined in Claim 4 comprising asymmetrically reducing 3-hydroxy-<a-oxotricyclo[3.3.1.1^{3,7}]decane-1-acetic acid by enzymatic amination or transamination.

17. A method for producing (<aS)-<a-amino-3-hydroxytricyclo [3.3.1.1^{3,7}]decane-1-acetic acid as defined in Claim 4 comprising:

(a) hydrolyzing tricyclo [3.3.1.1^{3,7}]decane-1-acetic acid into α-bromotricyclo[3.3.1.1^{3,7}]decane-1-acetic acid;

(b) reacting α-bromotricyclo[3.3.1.1^{3,7}]decane-1-acetic acid with H_2SO_4 and HNO_3 to produce α-bromo-3-hydroxytricyclo [3.3.1.1^{3,7}]decane-1-acetic acid;

(c) dissolving α-bromo-3-hydroxytricyclo[3.3.1.1^{3,7}]decane-1-acetic acid in ammonium hydroxide and heating the reaction mixture;

(d) concentrating the reaction mixture to yield a chiral mixture (<aS)-<a-amino-3 hydroxytricyclo [3.3.1.1^{3,7}]decane-1-acetic acid; and

(e) isolating (<aS)-<a-amino-3-hydroxytricyclo [3.3.1.1^{3,7}]decane-1-acetic acid (Formula V) from the chiral mixture.

18. The method of Claim 15 wherein (5S)-5-aminocarbonyl-4,5-dihydro-1H-pyrrole-1-carboxylic acid, 1,1-dimethyl ester is produced by hydrolyzing 4,5-dihydro-1H-pyrrole-1,5-dicarboxylic acid, 1-(1,1-dimethylethyl),5-ethyl ester by saponification with lithium hydroxide and forming an amide with mixed anhydride and mesyl chloride.

19. A cell line capable of producing (<aS)-<a-amino-3-hydroxytricyclo[3.3.1.1^{3,7}]decane-1-acetic acid (Formula V) as defined in Claim 4 by asymmetric reductive amination or transamination of 3-hydroxy-<a-oxotricyclo[3.3.1.1^{3,7}]decane-1-acetic acid (Formula II).

20. A method for producing 3-hydroxy-<a-oxotricyclo[3.3.1.1^{3,7}]decane-1-acetic acid as defined in Claim 3, which comprises treating dichloro-(3-hydroxy-

adamantan-1-yl)-acetic acid alkyl ester with an alkali metal base in the presence of an organic solvent to form a reaction mixture containing the corresponding alkali metal salt, treating the reaction mixture with acid to form the corresponding 3-hydroxy-<a-oxotricyclo[3.3.1.1^{3,7}]decane-1-acetic acid product.

21. The method as defined in Claim 20 wherein the formation of product is carried out in a single pot procedure.

22. The method as defined in Claim 20 wherein the alkali metal base is sodium hydroxide and the acid is hydrochloric acid.

23. A method for preparing (5S)-5-aminocarbonyl-4,5-dihydro-1H-pyrrole-1-carboxylic acid, 1-(1,1-dimethylethyl)ester (IV) as defined in Claim 9, which comprises

providing an alkali metal salt of 4,5-dihydro-1H-pyrrole-1,5-dicarboxylic acid, 1-(1,1-dimethylethyl)ester, and

treating a solution of the alkali metal salt having a pH below 7 with 4-(4,6-dimethoxy-1,3,5-triazin-2-yl)-4-methylmorpholinium chloride and with a base to form (5S)-5-aminocarbonyl-4,5-dihydro-1H-pyrrole-1-carboxylic acid, 1-(1,1-dimethylethyl) ester (IV).

24. The method as defined in Claim 23 wherein the alkali metal salt is treated with ammonia as the base.

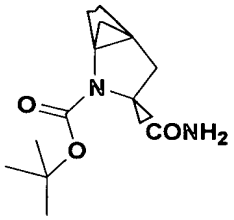
25. The method as defined in Claim 23 wherein the alkali metal salt is formed by treating the dicyclohexylamine salt of 4,5-dihydro-1H-pyrrole-1,5-dicarboxylic acid, 1-(1,1-dimethylethyl)ester with an alkali metal base to form the corresponding alkali metal salt.

26. The method as defined in Claim 23 wherein the alkali metal salt is formed by providing the ethyl ester of 4,5-dihydro-1H-pyrrole-1,5-dicarboxylic acid,

1-(1,1-dimethylethyl)ester XI and treating the ethyl ester with ethanol and sodium hydroxide.

27. The method as defined in Claim 25 wherein the dicyclohexylamine salt is prepared by treating a solution of 4,5-dihydro-1H-pyrrole-1,5-dicarboxylic acid, 1-(1,1-dimethylethyl)ester in ethanol and toluene with sodium hydroxide to form the corresponding sodium salt, and treating the sodium salt with t-butyl methyl ether and heptane to form a solution of the sodium salt, reducing the pH of the solution of sodium salt to about 2.5 to abuot 3 while maintaining temperature <5°C, separating out the resulting organic layer, and treating the organic layer with dicyclohexylamine to form the corresponding dicyclohexylamine salt.

28. A method for preparing [1S-(1<a,3<b,5<a)]-3-(aminocarbonyl)-2-azabicyclo[3.1.0]hexane-2-carboxylic acid, 1,1-dimethylethyl ester of the structure



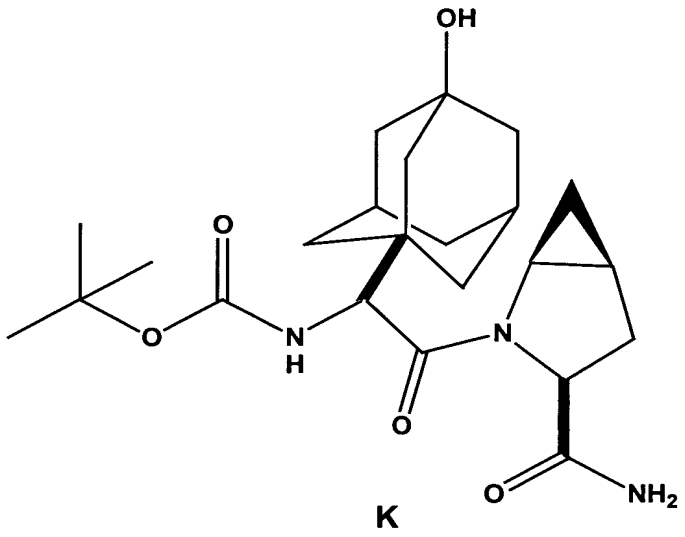
which comprises

treating a solution of 4,5-dihydro-1H-pyrrole-1,5-dicarboxylic acid, 1-(1,1-dimethylethyl), 5-ethyl ester with diethyl zinc and chloro iodomethane and a reduced temperature of about -20°C or less to form a mixture of syn- and anti-isomers of N-BOC-methanoproline ethyl ester, treating the above mixture of isomers with an aqueous solution of methyl amine to separate out the syn-BOC-4,5-methanoproline ethyl ester isomer,

treating the syn-isomer with a strong base to yield syn-N-BOC-4,5-methanoproline, and treating the syn-N-BOC-4,5-methanoproline with N-methylmorpholine and isobutyl chloroformate, brine and ammonia to form [1S-

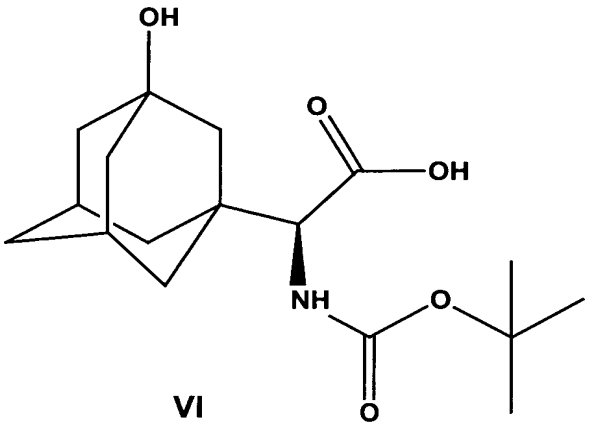
(1<a,3<b,5<a)-3-(aminocarbonyl)-2-azabicyclo[3.1.0]hexane-2-carboxylic acid, 1,1-dimethylethyl ethyl ester.

29. A method for forming intermediate K of the structure



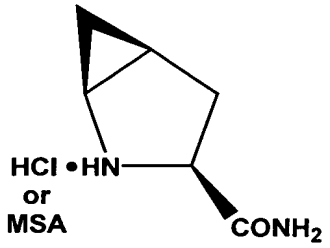
K

which comprises providing a protected compound VI



VI

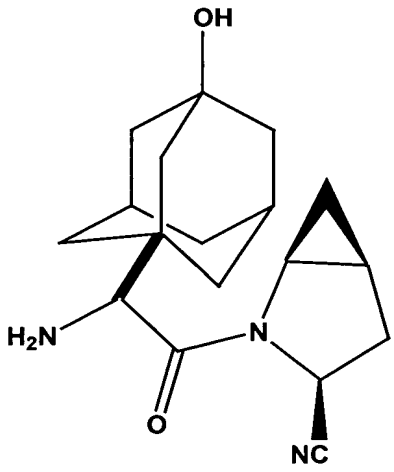
treating compound VI with mesyl chloride and Hunig base and compound J of the structure



J

and 1-hydroxybenzotriazole (HOBT) to form compound K.

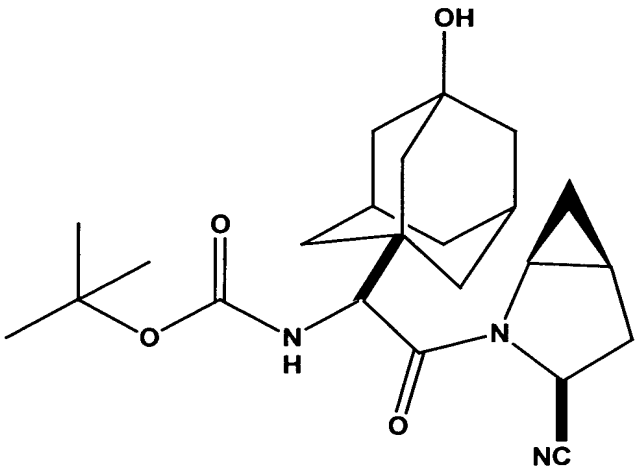
30. A method for preparing a free base compound of the structure M'



M'

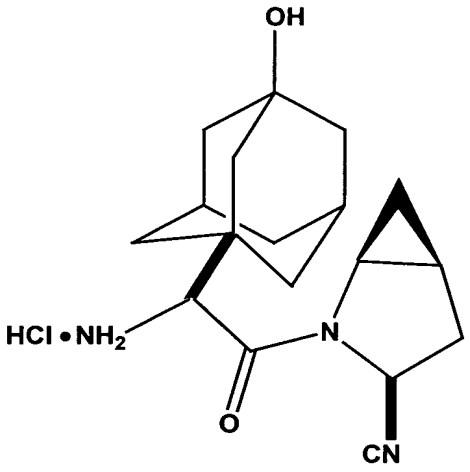
which comprises

providing a protected compound of the structure L



L

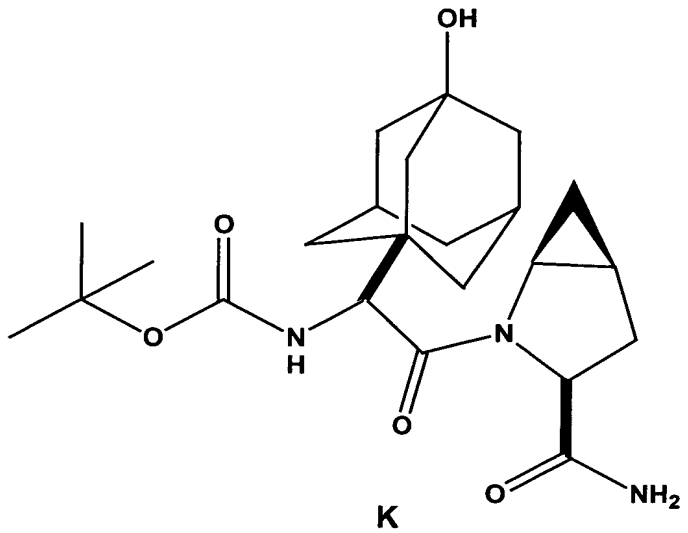
and treating compound L with hydrochloric acid to form the corresponding hydrochloric acid salt L′



L'

treating compound L′ with hydrochloric acid and sodium hydroxide to form the free base compound M′.

31. The method as defined in Claim 30 wherein compound L is formed by dehydrating intermediate K



K

in the presence of pyridine and trifluoroacetic anhydride, and then hydrolyzing the reaction product in the presence of strong base to form compound L.